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Bulletin 319 June 1930

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no. 319

THE THIRTY-FOURTH REPORT ON FOOD PRODUCTS

AND THE TWENTY-SECOND REPORT ON DRUG PRODUCTS

1929

Connecticut
Agricultural Experiment Station
New Haven

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THOMAS HOLT

The Station, and particularly this department, was grieved to learn of the sudden death on April 29, 1930, of Thomas Holt, Dairy and Food Commissioner. The operation of the food and drug law and of other regulations brought us into continual contact with him and his office, first as Deputy Commissioner and later as Commissioner, for a total period of 16 years. Good sense, sound judgment, hard work and kindly disposition characterized the man and his administration. There can be no better testimonial to his worth than that he grew constantly in the esteem and confidence of his fellow officials and others with whom he came in contact in his public service, and that in the more private relationships of his home and his home community he was held in respect and affection.

Material	Page	Sampled by, or Submitted to: The Station	Sampled by, or Submitted to: The Dairy and Food Commissioner	Total	Adulterated, below standard, or otherwise illegal
FOODS					
Beverages, soda water type	780	0	149	149	3
Malt, near beer type	780	0	23	23	2
Cereal products, etc.:					
Breakfast food, etc.	780	6	80	86	...
Flour, bread, etc.	787	5	0	5	...
Coffee	787	1	1	2	...
Eggs	788	2	2	4	...
Fats and oils:					
Butter	788	0	199	199	1
Oleomargarine	788	0	5	5	0
Olive oil	789	2	24	26	8
Foods, special and miscellaneous	789	54	0	54	...
Fruit products:					
Cider	794	0	5	5	...
Grape-fruit juice	794	0	2	2	...
Grape juice, etc.	794	3	1	4	...
Honey	794	3	0	3	...
Ice cream, etc.	794	5	301	306	4
Meat products:					
Hamburg steak	804	0	19	19	4
Frankfurts	805	15	9	24	8
Pork sausage	805	0	20	20	1
Meat loaf seasoning	805	0	1	1	0
Milk and milk products:					
Market milk	805	53	112	165	36[1]
Chocolate skimmed milk	806	0	4	4	0
Buttermilk, semi-solid	806	1	0	1	0
Evaporated milk	806	1	0	1	0
Powdered whole milk	806	1	0	1	0
Cream	806	2	0	2	0
Vinegar	808	11	340	351	64
Total for foods		165	1297	1462	131

[1] Not including samples below standard only.

Material	Page	Sampled by, or Submitted to		Total	Adulterated, below standard, or otherwise illegal
		The Station	The Dairy and Food Commissioner		
DRUGS, ETC.					
Ammonia, aromatic spirits of	810	0	7	7	3
Calcium hydroxide, solution of	811	0	5	5	0
Camphor, spirit of	812	0	9	9	0
Ethyl nitrate, spirit of	813	0	13	13	7
Iodine, tincture of	814	0	10	10	1
Magnesium citrate, solution of	814	0	8	8	5
Peppermint, essence of	816	0	4	4	1
Rhubarb, comp.	816	0	1	1	...
Total for drugs		0	57	57	17
MISCELLANEOUS					
Drugs and other materials	817	19	2	21	2
Materials examined chiefly for poisons	818	50	5	55	...
Tobacco	818	170	0	170	...
Potatoes	820	22	0	22	...
Beets	820	17	0	17	...
Water (State Water Commission)	821	6	0	6	...
Total for miscellaneous		284	7	291	2
Total for all, exclusive of glassware		449	1361	1810	150
Babcock glassware and thermometers	821	2538	0	2538	21

FOOD PRODUCTS, THIRTY-FOURTH REPORT

DRUG PRODUCTS, TWENTY-SECOND REPORT

E. M. Bailey

The Department of Analytical Chemistry is primarily concerned with analytical and other work incidental to inspection and control of commercial fertilizers, feeding stuffs, foods, drugs and insecticides, and to the certification of glassware used in carrying out the Babcock test upon milk and cream, and of thermometers used in the control of the pasteurization of milk. The Statutes also provide for collaboration with the State Water Commission, if required, and as our facilities permit. A considerable amount of work is required each year due to an arrangement with the Storrs Agricultural Experiment Station, whereby analyses needed in connection with field experiments and feeding trials are made in this laboratory. Collaboration in tobacco investigations being carried on by this Station has involved the examination of more than 160 samples during the past year, requiring approximately 1,000 separate determinations. In addition to the preparation of annual reports upon inspection of fertilizers, feeding stuffs, and foods and drugs, the department has within the year assumed most of the office work connected with the annual registration of fertilizers and feeding stuffs.

This report summarizes work done for the year 1929 for purposes of food and drug inspection, samples for the most part being submitted by the Dairy and Food Commissioner. The report includes a large number of analyses of cereal breakfast foods and similar products taken from a previous bulletin[1] and supplemented by 86 new analyses, most of them representing new products. Various members of the staff have collaborated with referees of the Association of Official Agricultural Chemists in studies of methods of analysis for foods and drugs. The chemist in charge has continued to serve on two committees of that Association and in October, 1929, was elected its president. With this appointment the presidency of the Association comes to the Station for the fifth time. Service on the Food Standards Committee of the United States Department of Agriculture and as a consultant to the Council on Pharmacy and Chemistry of the American Medical Association has been continued.

The interested coöperation of the staff of this department in carrying on the work herein reported, and in all matters pertaining to the general conduct of the department's work, is gratefully acknowledged.

[1] Conn. Agric. Exp. Sta., Bull. 197. 1917.

FOODS

BEVERAGES

SODA WATER TYPE

The statutes relating to carbonated beverages of the soda water type are very generally observed. Only occasional samples are found to contain saccharin and the minimum limit for sugar, five per cent, is always exceeded. Artificial colors and flavors are indicated by suitable declarations.

One hundred and forty-nine samples were submitted by the Dairy and Food Commissioner. One, sample 41947, lemon and lime soda, purchased of J. Richmond and Son, Moosup, contained saccharin. Sample 42487, Pale Moon, purchased of C. Manwaring and Son, Niantic, contained artificial color, which was not declared. Sample 41932, strawberry soda, purchased of the Newgate Ginger Ale Company, Thompsonville, bore misleading statements of equivalent food value.

NEAR-BEER

Twenty-three samples of malt beverages of the "near-beer" type were submitted by the Dairy and Food Commissioner. Two of these were found to contain caffeine in amounts ranging from 0.8 to 0.9 of a grain per bottle of 12 fluid ounces. Objection was taken to these products for the reason that caffeine is an added substance foreign to the article generally known as beer, which these beverages purport to be. The products bore labels of the Munch Brewery and the Edelbrau Brewing Co., both of Brooklyn, New York.

CEREAL PRODUCTS, ETC.

CEREAL BREAKFAST FOODS, ETC.

Analyses of breakfast foods and of similar preparations have been given in previous bulletins[1] of this Station. During the past year a considerable number of analyses has been added, which represent many products not included in previous summaries. Table I includes the older analyses together with those of products examined recently. Eighty-six new analyses have been added to the list. All of the samples were submitted by the Dairy and Food Commissioner, with three exceptions.

The classification of products is suggested largely by the name of the article or by information at hand concerning its origin. In the case of mixtures or of products the names of which do not suggest the proper grouping, some errors of classification may occur. Besides the ordinary breakfast foods the list includes so-called "health" and laxative preparations.

[1] Conn. Agric. Exp. Sta., Bull. 197, 1917; Ibid., Bull. 286. 1927.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Barley preparations:							
Cream of Barley	9.2	1.4	11.1	0.6	76.1	1.6	363
*Cris Cross Brand Barley Crystals Breakfast Cereal	9.2	1.1	9.7	0.8	78.3	0.9	360
Farwell & Rhines' Barley Crystals	9.9	1.2	11.5	0.9	75.2	1.3	359
*Lust's Old Fashioned Barley Health Food	5.3	2.4	12.2	11.9	66.2	2.0	332
Quaker Scotch Brand Pearled Barley	12.1	1.0	9.5	0.3	76.2	0.9	351
Corn (maize) preparations:							
Cerealine	11.2	1.5	6.9	0.1	79.9	0.4	351
E-C Corn Flakes Toasted	12.1	2.2	6.6	0.2	78.6	0.3	344
F. S. Granulated Hominy	13.3	0.4	8.0	0.2	77.1	1.0	349
Hecker's Cream Hominy	11.7	0.3	9.8	0.5	77.3	0.4	352
H. O. New Process Hominy	11.3	0.4	8.0	0.2	79.8	0.3	354
Jackson's Roman Meal	8.5	3.7	13.3	5.0	66.1	3 4	348
Jersey Corn Flakes	7.7	0.9	8.5	0.3	82.3	0.3	366
*Kellogg's Corn Flakes	4.4	2.5	7.2	0.6	85.1	0.2	371
Kellogg's Toasted Corn Flakes	11.7	2.7	6.4	0.2	78.8	0.2	343
Korn Kinks	12.0	2.2	7.4	0.1	77.9	0.4	345
Nichols' Snow White Samp	13.4	0.3	7.8	0.5	77.7	0.3	345
*Pillsbury's Hominy Grits	8.5	0.3	7.8	0.6	82.2	0.6	365
*Post's Corn Flakes	7.6	2.3	7.1	0.5	82.1	0.4	360
Post Toasties	11.7	1.8	6.6	0.2	79.4	0.3	347
Quaker Best Yellow Corn Meal	12.3	0.5	7.5	0.2	78.7	0.8	352
Quaker Corn Puffs	12.0	0.4	8.7	0.1	78.5	0.3	352
Quaker Toasted Corn Flakes	11.6	1.3	6.8	0.0	79.9	0.4	350
Ralston Hominy Grits	11.3	1.0	9.0	0.4	75.4	2.9	364
*Royal Scarlet Toasted Corn Flakes	7.6	2.1	7.5	0.7	81.6	0.5	361
Street's Perfection Hominy	12.4	0.4	7.9	0.1	77.9	1.3	355
Sunbeam Pearl Hominy	14.3	0.4	9.4	0.3	75.0	0.6	343
*Sunbeam Toasted Corn Flakes	7.4	2.2	7.5	0.7	81.6	0.6	362
*Sunny Corn	8.5	0.4	8.4	0.6	81.5	0.6	365
Sunseal Sunny Corn	12.3	0.4	8.3	0.4	78.2	0.4	350
Sunseal Cream Corn Meal	12.0	0.5	8.9	0.4	77.2	1.0	353
Sunseal Hominy Grits	11.6	0.5	8.5	0.4	77.8	1.2	356
*Three Minute Hominy Grits	8.6	0.3	8.4	0.5	81.8	0.4	365
Washington Corn Crisps	12 1	2.9	7.8	0.2	76.8	0.2	340
Quaker Hominy Grits	13.2	0.5	7.9	0.2	77.7	0 5	347

* Analyzed in 1929.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.—*Continued*

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Oat preparations:							
Bestovotes	11.0	2.1	16.2	1.0	63.1	6.6	377
Bufceco Rolled Oats	11.1	2.0	15.1	1.0	64.0	6.8	378
Fruited Oats	9.7	3.3	13.1	1.3	68.2	4 9	369
Grandmother's Crushed Oats	10.7	1.9	14.9	0.6	65.4	6.5	380
Health Brand White Oats	10.9	2.0	13.8	1.0	64.5	7.8	383
Hecker's Cream Oat Meal	11.5	1.8	15.6	0.9	64.6	5.6	371
*H–O	7.2	2.0	14.8	1.4	67.8	6.8	392
Hornby's Steam Cooked Oat Meal	10.6	1.7	16.1	0.8	64.1	6.7	381
Keen & Robinson's Granulated Scotch Oatmeal	10.4	1.9	13.7	0.8	64.1	9.1	393
*Lee's Quick Cooking Rolled Oats	7.6	2.1	14.1	1.5	67.6	7.1	391
Leggett's Premier 15 Minute Oat Flakes	11.3	1.8	17.2	0.6	63.7	5.4	372
*Mascot Brand Rolled Oats	7.0	1.8	13.6	1.5	68.9	7.2	395
McCann's Irish Oat Meal	9.2	1.8	15.1	0.3	64 9	8.7	393
Mother's Crushed Oats	10.9	1.6	15.6	0.9	64.9	6.1	377
*Mother's Quick Cooking Oats	7.4	1.9	14.2	1.3	67 9	7.3	395
*New Oata	7.7	1 9	15.8	2.1	67.8	4.7	376
Paw-Nee Rolled Oats	10.8	1.9	15.8	0.8	64.0	6.7	380
Purity Rolled Oats	13.5	2.0	16.3	1.0	61.1	6.1	365
Quaker Oats	10.8	1.9	15 9	0.9	64.5	6.0	376
*Quaker Oats	7.5	1.8	15.8	1.3	67.3	6.3	389
Robinson's Patent Groats	8.4	1.8	12.8	0.7	67.7	8.6	399
*Scotch Brand Oats	7.1	1 9	14.4	1.3	68.5	6.8	392
*Scotch Oat Meal	5.2	1.9	12.6	1.3	70.6	8.4	409
Scotch Porage Oats	10 1	1.7	13.3	0.4	64.9	9.6	399
Sovereign 15 Minute Oat Flakes	10.8	2.0	16.5	0 9	64.0	5.8	374
*Three Minute Oat Flakes	7.6	1.7	15.9	1.1	67.6	6.1	390
White Rose Rolled Oats	10.3	1.9	14.3	0.7	64.8	8.0	388
Rice preparations:							
*Comet Brown Rice Flakes	6.8	3.9	7 5	1.0	79.4	1.4	361
Comet Cereal	11.3	0.3	7.2	0.2	80.7	0.3	354
Cook's Flaked Rice	12.6	0 4	7.8	0.2	78.9	0.1	348
Cook's Malto Rice	11.3	0.6	7.6	0.1	80.2	0.2	353
*Cream of Rice	9.3	0.7	7.6	0.6	81 3	0 5	361
*Heinz Rice Flakes	4.2	3.1	7.6	4 2	80.4	0.5	357
*Kellogg's Rice Krispies	5.0	2.4	6.9	0.5	84.8	0.4	371
Kellogg's Toasted Rice Biscuit	5.0	3 7	10.1	0.2	80.7	0.3	366
Kellogg's Toasted Rice Flakes	4.7	3.4	10.0	0 2	81.3	0.4	369
Milk Rice	12.3	3.2	6.9	0.2	77.2	0.2	338
Quaker Puffed Rice	12.2	0.4	7.6	0.1	79 5	0.2	350

* Analyzed in 1929.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.—*Continued*

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Rice preparations—Concluded:							
*Quaker Puffed Rice	6.5	0.4	6.4	0.5	86.0	0.2	371
*Toasted Rice Flakes	7.3	3.4	7.3	0.5	81.2	0.3	357
*White House Rice Flakes	8.9	4.8	7.4	1.4	75.2	2.3	352
Rye preparations:							
Cream of Rye	11.5	1.7	12.0	1.4	71.8	1.6	350
*Cream of Rye	8.3	1.7	9.9	1.3	77.8	1.0	359
Kellogg's Toasted Rice Flakes	8.1	2.2	11.4	0.6	76.2	1.5	364
Ry-Krisp	5.8	2.8	14.0	1.3	74.4	1.7	369
*Ry-Krisp	6.5	3.6	13.0	2.1	73.3	1.5	359
Wheat preparations:							
Alber's Wheat Flakes Mush	11.5	1.6	11.1	0.3	73.4	2.1	357
Cero-Vita	4.6	3.5	8.9	0.3	82.0	0.7	370
Cinnamon Rusks	9.9	0.7	10.3	0.2	71.7	7.2	393
*Cream Farina	9.3	0.5	11.4	0.6	77.5	0.7	362
*Cream of Wheat	8.5	0.6	12.3	0.6	77.2	0.8	366
Cream of Wheat	13.1	0.6	11.5	0.2	73.7	0.9	349
Cresco Grits	11.1	0.6	17.8	0.5	68.6	1.4	358
*Cris Cross Brand Whole Wheat Breakfast Cereal	9.6	1.7	12.3	2.2	72.4	1.8	355
Crystal Wheat	9.5	1.9	11.3	1.7	73.6	2.0	358
Dieto Rusks	6.4	1.5	15.9	1.0	66.1	9.1	410
*"Force" Toasted Wheat Flakes	6.4	3.0	10.3	1.3	77.2	1.8	366
Force	10.7	2.8	10.6	1.1	73.7	1.1	347
F. S. Farina (Quaker Farina)	13.7	0.4	10.2	0.2	74.6	0.9	347
Fruited Wheat	9.9	3.6	15.6	2.4	66.2	2.3	348
Grandmother's A. & P. Farina	12.9	0.6	10.8	0.1	75.0	0.6	349
Granola	6.1	2.3	13.9	0.6	76.3	0.8	368
Granose Biscuit	11.3	3.9	10.3	1.8	71.1	1.6	340
Granose Flakes	6.0	3.9	10.3	0.5	75.4	3.9	378
Hecker's Farina	12.7	0.6	10.0	0.1	75.9	0.7	350
Holland Rusk	11.0	1.3	12.1	0.1	70.4	5.1	376
Jireh Frumenty	6.2	1.4	12.3	1.1	77.3	1.7	374
Jireh Whole Wheat Farina	6.2	1.8	12.9	2.2	74.6	2.3	371
Kellogg's Breakfast Toast	7.7	1.6	13.6	0.3	74.9	1.9	371
Kellogg's Krumbles	10.0	2.6	12.0	1.9	72.3	1.2	348
*Kellogg's Krumbles	6.3	3.3	11.5	1.9	75.3	1.7	362
*Kellogg's Shredded Whole Wheat Biscuit	7.7	2.2	12.3	2.2	73.8	1.8	361
Kellogg's Toasted Wheat Biscuit	5.8	2.4	14.2	1.5	74.7	1.4	368

* Analyzed in 1929.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.—*Continued*

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Wheat preparations—Concluded:							
Kellogg's Toasted Wheat Flakes	5.2	2.7	9.3	1.2	80.5	1.1	369
Kellogg's Zwieback	6.2	1.6	14.3	0.2	76.1	1.6	376
Leggett's Premier Farina	14.1	0.5	11.1	0.1	73.3	0.9	346
*Mack's Wheat Toast	5.9	2.4	12.9	1.3	66.9	10.6	415
*Malt Breakfast Food	6.2	1.8	13.6	1.5	75.4	1.5	370
Malt Breakfast Food	9.6	1.4	13.8	1.0	72.7	1.5	360
Manana Gluten Breakfast Food	7.6	2.5	42.6	1.7	43.6	2.0	363
*Mapl-Flake	6.9	3.8	8.5	2.0	77.3	1.5	357
Mapl-Flake	10.8	2.8	9.3	1.2	74.7	1.2	347
*Mello Wheat	9.7	0.4	11.3	0.6	77.3	0.7	361
*Monarch Food of Wheat	9.3	0.5	11.3	0.5	77.4	1.0	364
*Monarch Leenie Weenie Wheat Hearts	8.2	0.4	11.9	0.5	78.5	0.5	367
Mother's Wheat Hearts	13.5	0.4	10.7	0.2	74.1	1.1	349
Pettijohn's Breakfast Food	10.3	1.7	9.1	2.0	74.9	2.0	354
*Pettijohn's Rolled Wheat	7.7	1.5	14.4	2.5	71.9	2.0	364
Pillsbury's Best Cereal	11.3	0.5	11.5	0.1	75.9	0.7	356
*Pillsbury's Farina	8.0	0.5	12.1	0.5	78.1	0.8	368
*Pillsbury's Vitas Wheat	8.4	0.5	10.9	0.4	79.0	0.8	367
Quaker Cracked Wheat	11.7	1.7	9.3	1.7	73.3	2.3	351
*Quaker Farina	8.9	0.3	11.4	0.5	78.1	0.8	365
*Quaker Puffed Wheat	6.3	1.6	14.3	2.1	74.2	1.5	368
Quaker Puffed Wheat	11.5	1.8	13.1	1.6	70.2	1.8	349
Quaker Wheat Berries	9.8	1.4	14.0	1.2	71.6	2.0	360
Ralston Health Food	12.4	1.4	11.9	1.1	71.5	1.7	349
*Ralston Wheat Flakes	5.8	4.0	9.6	1.7	77.4	1.5	362
Ralston Wheat Food	11.9	1.1	11.3	0.8	73.1	1.8	354
Sanitas Granuto	4.9	1.3	10.1	0.4	81.6	1.7	382
Saxon Wheat Food	9.8	0.8	12.8	0.5	74.4	1.7	364
Shredded Wheat Biscuit	8.5	1.5	11.0	2.6	75.0	1.4	357
*Shredded Whole Wheat	6.5	1.6	12.9	2.4	74.6	2.0	368
Street's Perfection Farina	13.1	0.5	10.3	0.1	74.9	1.1	351
Triscuit	10.3	1.7	11.0	1.7	73.9	1.4	352
Vitos	11.6	0.5	11.1	0.2	75.6	1.0	356
*Vita-O-Wheat	7.8	1.3	12.6	1.1	75.0	2.2	370
*Wheatena	6.8	1.6	11.9	1.6	75.6	2.5	372
Wheatena	10.4	0.7	11.3	0.6	74.2	2.8	367
Wheatlet	12.2	0.8	12.8	0.3	72.3	1.6	355
*Wheatsworth Whole Wheat	8.4	6.6	11.4	1.9	70.2	1.5	340
Whole Grain Wheat (prepared)	66.2	1.5	6.6	1.2	23.7	0.8	128
*Whole Wheat Flake Wheaties	7.4	4.6	13.5	1.7	71.3	1.5	353
Zest	10.7	2.6	9.0	1.2	75.3	1.2	348

* Analyzed in 1929.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.—*Continued*

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Wheat bran:							
Ballard's Obelisk Sanitary Edible Bran	11.5	4.5	17.3	5.6	55.7	5.4	301
Culp's Capitol Health Bran	11.2	5.3	13.4	8.2	57.6	4.3	323
*Dina-Mite Wheat Bran Flax	8.7	2.8	14.4	4.0	66.1	4.0	358
Health Food Co.'s Wheat Bran	11.6	5.6	14.3	8.2	56.2	4.1	319
Jireh Wheat Bran	11.1	4.3	16.8	6.3	56.7	4.8	337
*Johnson's Educator Bran	7.8	5.9	15.6	8.8	57.0	4.9	335
Johnson's Educator Wheat Bran	11.6	6.1	15.4	7.8	54.4	4.7	322
*Kellogg's Bran Flakes	6.7	3.6	10.9	2.8	74.2	1.8	357
Kellogg's Sterilized Wheat Bran	9.6	6.0	16.3	8.5	54.4	5.2	330
*Monarch Wheat Bran	7.3	6.3	14.0	10.8	56.7	4.9	327
*Pillsbury Wheat Bran	6.0	6.9	16.0	9.3	57.6	4.2	332
Wheat Bran Biscuit and other laxative preparations:							
Bran Bisque	8.5	3.1	12.1	2.2	61.0	13.1	410
Bran-eata Biscuit	9.8	4.4	9.1	3.6	72.2	0.9	333
Bran Zos	11.9	3.0	13.2	3.8	65.6	2.5	338
*Brose	7.3	3.1	14.2	4.1	67.1	4.2	363
Brose Good Health Breakfast Food	10.1	2.6	14.4	3.1	65.5	4.3	358
*Cellu Bran.	3.9	4.6	3.6	20.8	37.1	30.0†	433
Cerag	9.2	3.6	11.3	2.0	73.0	0.9	345
Cerena	7.2	4.9	27.8	2.4	46.3	11.4	399
Christian's Laxative Bread	9.9	2.8	10.0	1.3	74.6	1.4	354
Christian's Laxative Cereal Flakes	13.0	1.7	10.4	1.0	72.5	1.4	344
Colax	13.1	2.1	1.1	0.1	82.8	0.8	343
Dietetic Bran Biscuit	9.3	5.0	9.9	1.7	69.1	5.0	361
Educator Bran Cookies	7.1	3.3	8.9	1.5	64.7	14.5	425
Educator Bran Meal	11.8	2.9	12.3	3.8	66.4	2.8	340
F. B. A. Laxative Health Biscuit	11.1	3.1	6.1	0.7	77.3	1.7	349
*Fig and Bran	6.3	7.1	13.3	7.8	62.6	2.9	330
Fruit Nut Cereal	7.3	3.2	13.5	2.4	72.4	1.2	354
Good Health Biscuit (Kellogg)	10.9	4.2	7.7	1.5	74.5	1.2	340
Health Food Wafers	9.7	5.3	10.0	1.4	65.7	7.9	374
India (Digestive) Biscuit	8.7	5.0	12.8	5.2	66.1	2.2	335
*Kellogg's All Bran	6.0	7.4	14.4	6.3	63.5	2.4	333
Laxa	6.6	5.0	12.4	6.6	66.6	2.8	341

* Analyzed in 1929.
† Largely mineral oil.

TABLE I. ANALYSES OF CEREAL BREAKFAST FOODS, ETC.—*Concluded*

Description of Food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
	%	%	%	%	%	%	
Wheat Bran Biscuit and other laxative preparations—Con.							
Laxative Biscuit (Kellogg)..	9.4	3.0	16.7	2.4	57.7	10.8	395
*Lust's Original Fig Bran ..	5.9	5.7	11.3	5.9	69.4	1.8	339
Mansfield's Agar Agar Wafers	7.9	2.3	7.1	0.8	69.9	12.0	416
Oval Digestive Biscuit (H. & P.)	8.8	2.1	7.8	0.5	64.5	16.3	436
*Post Bran Flakes	6.3	4.7	14.4	3.5	68.9	2.2	353
*Prepared Bran	5.4	6.1	18.3	14.2	51.9	4.1	319
*Raisin Bran	6.0	2.4	13.7	1.9	74.0	2.0	369
*Sanitarium Cooked Bran ..	4.8	6.8	16.9	9.5	57.7	4.3	338
*Sanitarium Fig and Bran Flakes	4.8	5.9	11.5	4.4	71.0	2.4	352
Uncle Sam Health Food	6.3	3.1	21.3	4.0	40.9	24.4	468
*Uncle Sam's Laxative Food	6.2	3.3	18.8	3.5	52.9	15.3	425
Zim	13.2	2.0	7.4	1.5	74.2	1.7	342
Miscellaneous preparations:							
*Alvita Breakfast Cereal ...	8.7	1.8	15.1	2.3	68.8	3.3	365
*Branola	7.7	2.7	13.5	3.8	69.8	2.5	356
Dieto Nut Cereal	5.0	2.0	21.6	1.2	51.8	18.4	459
Dieto Wheat and Barley Cereal	6.8	1.7	11.6	2.0	75.7	2.2	369
*Enright's Old Fashioned Cereal	8.7	1.5	15.4	2.3	69.9	2.2	361
Grape Nuts.	10.3	1.9	11.5	1.5	74.2	0.6	348
*Grape Nuts	3.7	2.5	11.6	1.5	78.5	2.2	380
*Hoyt's Gluten Bran Flakes	6.2	2.9	52.9	4.1	28.2	5.7	377
Jireh Wheat Nuts	7.6	2.3	19.0	1.0	54.5	15.6	434
*Kellogg's Pep	5.3	3.2	10.2	2.4	77.1	1.8	366
*Lima Bean Flakes	5.9	2.5	13.8	2.4	74.2	1.2	363
Malabar Manoca	13.3	1.3	0.6	0.6	84.1	0.1	340
*Melba Vegetized Toast	9.4	2.4	13.4	1.5	62.7	10.6	400
*Melba Vegetized Toast	6.6	2.2	14.3	1.7	65.9	9.3	405
*Muffets	6.7	1.7	12.1	2.3	76.0	1.2	363
Post Tavern Porridge	12.7	1.5	10.3	0.2	74.5	0.8	346
Post Tavern Special	9.9	0.9	10.9	0.3	76.9	1.1	361
*Post Toasties	6.6	2.9	7.2	0.6	82.3	0.4	361
*Ralston's	8.3	1.2	13.7	1.4	74.0	1.4	363
*Roman Meal	7.7	4.8	15.3	5.4	63.6	3.2	345
*Roman Meal	7.7	2.8	12.2	3.8	70.8	2.7	357
Sea Moss Farina	15.6	13.6	9.1	1.5	59.9	0.3	279
Sunbeam Tapioca	13.5	0.2	0.6	0.1	85.5	0.1	345
*Sunera	10.2	1.5	12.0	1.7	74.0	0.6	349
*Toasted Bran-Gluten Flakes	6.2	3.6	51.9	6.7	24.9	6.7	368
*Trix	6.7	2.3	14.6	0.7	72.8	2.9	376
Trix	6.2	1.5	14.5	0.3	77.3	0.2	369
Trufood (Trufood Co.)	5.7	1.4	11.5	1.8	77.1	2.5	377
*Vita-Bits	5.4	3.9	13.8	3.1	71.9	1.9	360
Zep (Battle Creek Food Co.)	5.0	2.9	14.0	1.3	74.6	2.2	374
*Zo	5.0	3.3	13.4	1.8	74.9	1.6	368

* Analyzed in 1929.

WHOLE WHEAT FLOUR

Through the courtesy of a local flour mill the laboratory had an opportunity to examine a sample of whole wheat flour and one of Graham flour as made at that mill, and also a sample of the wheat grain from which these products were made. It was pointed out to us that the only difference between the two flours was in degree of fineness, the Graham product being coarser than the whole wheat product. Within the limits of reasonable analytical error these three samples show the same composition, as we would expect them to do.

The analyses are as follows:

	No. 2950 Whole wheat flour %	No. 2951 "Graham flour" %	No. 2952 Wheat grain %
Moisture	10.63	10.53	10.23
Ash	1.64	1.75	1.67
Protein (N x 5.7)	13.22	13.45	13.17
Fiber	2.43	2.63	2.40
Carbohydrate, other than fiber, by difference	69.73	69.09	70.18
Fat (ether extract)	2.35	2.55	2.35
Protein-ash ratio	8.00	7.70	7.90

BREADS, WHOLE WHEAT AND OATMEAL

Two samples of bread, one featured as a whole wheat loaf and the other as an oatmeal loaf, were analyzed. The whole wheat loaf was made from whole wheat and first clear flours and the oatmeal loaf was made from stone ground oatmeal, whole wheat flour and rye flour.

In the absence of official definitions for products of these types there is no objection to the names "whole wheat" and "oatmeal" as applied to these respective products.

The analyses are as follows:

	No. 2916 Whole wheat bread %	No. 2917 Oatmeal bread %
Moisture	35.54	32.52
Ash	2.06	2.08
Protein (N x 6.25)	10.08	10.74
Fiber	1.10	0.62
Carbohydrate, other than fiber, by difference	46.22	48.92
Fat	5.00	5.12

COFFEE, ETC.

A sample of Dacosta liquid coffee, 40926, submitted by the Dairy and Food Commissioner, was analyzed as follows:

Total solids	8.78%
Nitrogen, total	0.29
Ash	1.54
Water-insol. ash	0.22
Acid-insol. ash	0.009
Alkalinity of water-soluble ash	18.38[1]
Alkalinity of water-insol. ash	4.88[1]
Caffeine	0.42

[1] N/1 HCl, cc. per 100 gms. sample.

A sample of Al-Mo-Co, a mixture of cereal, coffee, molasses and chicory according to declaration, was examined. It contained 0.18 per cent of caffeine.

This product is claimed to be 99.74 per cent caffeineless. Probably this means that it contains 0.26 per cent of caffeine and that the remainder, 99.74 per cent, is non-caffeine material. Construed in this way our result substantiates the claim. However, it may not be clear to everyone that ordinary coffee is 98.8 per cent non-caffeine material, assuming 1.2 per cent as a fair average for the caffeine content of coffee. Al-Mo-Co contains about one-seventh as much caffeine as does ordinary coffee.

EGGS

Two samples of eggs were examined for the Dairy and Food Commissioner and both passed as fresh eggs.

Two unofficial samples were examined, one of which was not fresh and the other was classed as inedible.

FATS AND OILS

BUTTER

One hundred and ninety-nine samples of butter from retail stores were submitted by the Dairy and Food Commissioner during the year.

Standard butter should contain not less than 80 per cent of fat and not more than 15.99 per cent of water. Only one sample was found to be substantially outside these limits. All of the others fully satisfied the legal requirements or varied so slightly from them that they were passed without question. The deficient sample, purchased of Ferrera and Co., New Canaan, contained 20.7 per cent of moisture and 77.3 per cent fat.

OLEOMARGARINE

Five samples of oleomargarine were submitted by the Dairy and Food Commissioner to be examined for color. These were tinted products, which fact led to the suspicion that they were in violation of our statute. No objection is raised to the sale of oleomargarine somewhat colored by reason of the natural color of ingredient fats or oils which may impart some degree of yellow color to the finished product. The law prohibits the sale of oleomargarine to which artificial color has been added for the sole purpose of producing color. An act of Congress permits artificial color to be added to butter without declaration or other restriction.

Examination of these products disclosed no artificial color present. This was later substantiated by information as to the

process of manufacture, and further confirmed in two instances by information that the government imposed a tax of only one-quarter of a cent per pound, which is the rate provided for uncolored oleomargarine.

OLIVE OIL, ETC.

Twenty-three samples of olive oil and one of salad oil were examined, 16 of which were not found adulterated. Eight were adulterated, misbranded or short weight.

Gallo's Brand Salad Oil, No. 43741, packed by I. A. Gallo, Hartford, was cottonseed oil colored with a coal-tar dye. The sample was also short weight, weighing 7.4 pounds to the gallon, whereas the weight per gallon calculated from the specific gravity of the oil should have been 7.64 pounds. In terms of volume the sample represented .97 of a gallon instead of a full gallon as labelled.

Olive oil in bulk, bought of the Roma Importing Co. of Waterbury, consisted in part of cottonseed oil.

Olive oil, Italia brand, bought of Gelgrego, New Haven, was also adulterated with cottonseed oil.

El Toro brand olive oil, International Importing Co., Hartford, contained cottonseed oil, as did also the same brand sold by S. Garofalo of Hartford.

Azrite brand olive oil purchased of J. Romas, Ansonia, said to have been supplied by Almeida and Co., of New Bedford, Mass., was adulterated with peanut oil.

Two unofficial samples for investigational purposes were found to contain cottonseed oil.

SPECIAL AND MISCELLANEOUS FOODS

In Table II are analyses of 54 special and miscellaneous foods. Some of these are for diets in which a minimum of carbohydrate is desired, as in certain cases of diabetes. In diabetes it is possible to provide suitable diets from natural foods of known composition but special foods are admissible and sometimes desirable to provide variety or attractiveness in the diet. Insulin treatment is resorted to when the minimal amount of carbohydrate cannot be given without the appearance of glycosuria. In any case a considerable excess of carbohydrate should be avoided and in this connection it must be kept in mind that 50 per cent of the protein may be converted into sugar. Some restriction in protein intake is therefore essential. Those so-called diabetic foods that do not differ from ordinary foods in digestibility offer no specific advantage in diabetic diets and must be eaten with the same precautions as are ordinary foods of like composition.

Flour of cooked chestnuts is a product of French manufacture. It does not appear to be made from the whole, cooked, dry chest-

nut (excluding shell). Comparison of this analysis with that of fresh chestnuts on the same water basis indicates that in the process of manufacture of the flour some of the nitrogenous and fatty portions of the nut are removed and that the starch is proportionately increased.

The *S.M.A.* preparations are specially designed for the feeding of infants. The significance of the symbol S.M.A. is "synthetic milk adapted." All of the preparations are directed to be fed on the advice and under the supervision of a physician.

Similac is another modified milk preparation intended for infant feeding also under the direction of a physician.

Nouron is not a milk substitute but is rather intended for children at the period when they are passing from wholly liquid to partially solid diet. It is made from soy beans, whole wheat flour and egg yolk.

The three algae samples, 3141, 3142 and 3143, were analyzed for a student of Iowa State College who is interested in them from a nutritional standpoint. Only one of them, 3141, is a commercial product.

"Fiddle heads," so-called, are a species of native ferns said to have been used by the Indians as food.

The soybean products, 2347, 2683 and 2682, were submitted by the Madison Rural Sanitarium in connection with its experimental studies in dietetics.

No.	Kind	Water	Ash	Protein (Factor 6.25)	Fiber	Carbohydrate: Starch + Water-soluble calculated as dextrose	Carbohydrate: Undetermined	Fat
	Groult, Jor, Paris	%	%	%	%	%	%	%
3010	Flour of Cooked Chestnuts	6.30	2.00	6.63	2.05	65.28	14.76	2.98
	Kings County Packing Co., Armona, Cal.							
837	Sac-A-Rin Brand, California Muscat Grapes	92.80	0.38	0.63	0.41	13.73[1]	....	....
838	Sac-A-Rin Brand, California Seedless Grapes	82.80	0.38	0.63	0.20	15.23[1]	....	....
841	Sac-A-Rin Brand, California Spinach	93.19	0.99	2.31	0.68	0.49[2]	....	....
840	Sac-A-Rin Brand, California Kadota Figs	83.79	0.49	0.50	0.51	13.02[1]	....	....
339	Sac-A-Rin Brand, California Yellow Cling Peaches	92.11	0.32	0.56	0.34	5.18[1]	....	....
	The Laboratory Products Co., Cleveland, Ohio							
3206	S. M. A.	2.28	2.51	10.44	none	57.67		27.10[3]
3207	S. M. A. Protein (Acidulated)	3.95	5.98	32.44	none	39.35		18.28[3]
3208	S. M. A. (Concentrated)	71.50	0.66	3.06	0.85	16.33		7.60[3]
	Loeb Dietetic Food Co., New York City							
2083	Loeb's Gluten Cracker Meal	8.57	1.64	41.78[4]	0.39	34.19	3.72	9.71
2084	Loeb's Gluten Zwieback	7.83	3.29	43.09[4]	0.46	34.44	4.26	6.63
2085	Loeb's Gluten Zwieback-Almond	7.76	2.97	42.52[4]	0.53	34.13	2.93	9.16
2086	Loeb's Gluten Bread Sticks	9.55	3.50	42.58[4]	0.76	35.88	1.30	6.43
2087	Loeb's Gluten Almond Bread Sticks	9.15	3.40	37.73[4]	0.96	29.00	5.49	14.27
2088	Loeb's Genuine Gluten Bread—Sliced and Toasted	7.61	5.71	43.78[4]	0.38	35.25	0.88	6.39
2089	Loeb's Gluten Breakfast Cereal	6.18	3.12	37.28[4]	0.98	27.44	8.07	16.93
2090	Loeb's Aerated Gluten Rolls	7.74	1.16	44.29[4]	0.25	35.81	2.11	8.64
2091	Loeb's Genuine Gluten Bread	24.93	2.45	35.81[4]	0.36	28.20	3.15	5.10
2092	Loeb's Self-Rising Gluten Flour	8.74	6.85	38.13[4]	0.25	40.44	4.04	1.55

[1] Calculated as invert sugar. Contains saccharin.
[2] Contains no saccharin.
[3] Roese-Gottlieb Method.
[4] Factor 5.7.

TABLE II. SPECIAL AND MISCELLANEOUS FOODS—*Continued.*

No.	Kind	Water	Ash	Protein (Factor 6.25)	Fiber	Carbohydrate		Fat
						Starch + Water-soluble calculated as dextrose	Undetermined	
	Loeb Dietetic Food Co., New York City—Con.	%	%	%	%	%	%	%
2093	Loeb's Lady Fingers	8.25	4.61	49.65	0.38	6.31	3.69	27.11
2094	Loeb's Dietetic Bran Wafers	6.71	4.73	26.00	10.65	2.06	30.81	19.04
2095	Loeb's Plain Gluten Noodles—Fine	9.43	1.61	39.56[4]	0.44	41.75	1.15	6.06
2096	Loeb's Plain Gluten Noodles—Broad	6.42	1.18	40.01[4]	0.32	44.19	0.00	7.88
2097	Loeb's Pure Gluten Flour	9.67	1.08	41.50[4]	0.29	42.88	2.99	1.59
2098	Loeb's Gluten Butter Cookies	7.18	2.63	37.56[4]	0.49	29.65	4.31	18.18
2099	Loeb's Gluten Crackers	7.05	2.71	35.34[4]	0.46	30.50	4.06	19.88
2100	Loeb's Sponge Cookies	8.90	4.14	53.81	0.40	4.81	3.77	24.17
2101	Loeb's Almond Macaroons	5.29	5.15	29.88	5.98	4.75	8.62	40.33
2102	Loeb's Starch Free Bran	8.38	4.89	17.75	16.57	2.81	41.24	8.36
2103	Loeb's Gluten Egg Barley	9.60	1.26	42.41[4]	0.67	36.31	1.26	8.49
2104	Loeb's Dietetic India Gum	15.88	5.42	0.63	....	....	77.82	0.25
2105	Loeb's Cocoa and Casein	6.21	4.46	35.63	3.75	12.63	20.24	17.08
2107	Loeb's Aerated Gluten Bread	8.28	1.06	44.86[4]	0.45	35.13	1.49	8.73
2108	Loeb's Dietetic Chocolate Bars	6.28	3.10	14.25	3.27	9.25	14.19	49.43
2109	Loeb's Chocolate Almond Bars	5.08	3.06	15.13	4.68	8.75	12.78	50.52
	Madison Health Foods, Madison, Tenn.							
1153	Malta	25.81	0.41	....	....	72.40		....
1150	Nut Meat	53.68	2.04[5]	14.38	0.44	7.77		21.69
1151	Nut Roast with Tomato	58.33	1.76[6]	11.19	0.84	12.71		15.17
1152	Vegetarian Meat	58.70	2.38[7]	14.13	1.22	7.67		15.90
	Mellin's Food Co. of North America, Boston, Mass.							
3210	Mellin's Food	2.20	3.90	10.63	none	81.54		1.73[3]

[3] Roese-Gottlieb Method.

[4] [illegible]

[5] [illegible]

[6] NaCl 0.81%.

TABLE II. SPECIAL AND MISCELLANEOUS FOODS—*Continued.*

No.	Kind	Water	Ash	Protein (Factor 6.25)	Fiber	Carbohydrate: Starch + Water-soluble calculated as dextrose	Carbohydrate: Undetermined	Fat
	M & R Dietetic Laboratories, Inc., Columbus, Ohio	%	%	%	%	%	%	%
3204	Similac	2.45	4.04	12.50	none	55.46		25.55[3]
	Nestle's Food Co., Inc., New York City							
3205	"Lactogen"—"Milk for Babies"	3.10	3.48	16.38	none	52.34		24.70[3]
3209	Nestle's Milk Food	3.25	2.57	14.38	0.60	69.85		9.35[3]
	Nouron Products Corp., New York City							
3280	Nouron	8.30	2.48	24.38	3.05	52.46		9.33
	Vitae Health Food Co., Seattle, Wash.							
2272	Blended Dietetic Bran (Starch Free)	8.33	4.50	14.75	22.05	9.63[8]	35.57	5.17
2273	"Soya Manna"	8.05	4.68	42.13	2.00	10.25[9]	12.42	20.47
	Miscellaneous							
3141	"Flour of Algae," Thyodine Chemical Co., Washington, D. C.	7.48	35.62[10]	5.38	7.43	43.46		0.63
3142	Laminaria Sp., from Osaka, Japan	5.95	23.83[11]	6.56	5.15	57.78		0.73
3143	Algae, Undaria Pinnatifida, from Kobe, Japan	6.95	34.50[12]	12.38	3.40	42.02		0.75
1893	Fiddle Heads, *Osmunda cinnamomea*	87.03	1.24	4.72	1.04	5.56		0.41
3539	Jeru Artichoke Soup, Pabst Dietary Products, Inc., Milwaukee, Wis.	73.92	6.50	2.25	0.75	16.55		0.03
2437	Soy Cheese, Madison Rural Sanitarium, Madison, Tenn.	77.20	0.55[13]	14.44	....	trace	4.31	3.50
2683	Soy Milk, raw, Madison Rural Sanitarium, Madison, Tenn.	91.29	0.48	4.94	....	0.92[14]	0.88	1.49
2682	Soy Milk, boiled, Madison Rural Sanitarium, Madison, Tenn.	94.54	0.42	2.25	....	0.96[14]	0.91	0.92

[8] Roese-Gottlieb Method.
[8] Starch, qualitative, present.
[9] Starch, qualitative, trace
[10] Total P_2O_5 0.60%; Fe_2O_3 0.24%; CaO 1.75%; Iodine 0.15%.
[11] Total P_2O_5 0.67%; Fe_2O_3 0.04%; CaO 1.48%; Iodine 0.36%.
[12] Total P_2O_5 0.97%; Fe_2O_3 0.07%; CaO 1.34%; Iodine 0.03%.
[13] NaCl, trace.
[14] Starch, qualitative, none.

FRUIT PRODUCTS

CIDER

Five samples were examined. Three contained benzoate of soda. Two were products not offered for sale but represented stock for the manufacture of vinegar.

GRAPE FRUIT JUICE

Two samples of grape fruit juice, Florida Gold Brand and Taylor's, were submitted by the Dairy and Food Commissioner. They contained respectively 17.80 and 18.67 per cent of solids, 15.12 and 15.25 per cent of sugar (as invert sugar), and 0.37 and 0.35 per cent of ash. No preservative was found.

GRAPE JUICE, ETC.

A sample of grape juice, white, 42496, submitted by the Dairy and Food Commissioner, was examined. It was Giltedge brand, sold by The Walter Stewart Co., Ridgefield. Treatment with sulfur dioxide and the addition of cane sugar in the form of a water solution were declared. Sulfur dioxide was found in the amount of 120 milligrams per liter. There was 18.6 per cent of invert sugar present, 0.5 per cent of sucrose and a total sugar content of 19.1 per cent. It was estimated that about 16 per cent of water and 4 per cent of sugar had been added.

Two other samples of grape juice, red, were examined for experimental purposes. Unsweetened juice contained 13.41 per cent of invert sugar and the same juice sweetened contained 17.8 per cent.

A sample of grape-flavored syrup contained 65.15 per cent of invert sugar and a sample of grape soda made from this syrup contained 14 per cent of invert sugar.

JAMS AND JELLIES

Eleven samples were tested for preservatives and for saccharin but no evidence of either substance was obtained.

HONEY

Three unofficial samples of honey were examined and all found to be within the limits of composition of pure honey.

ICE CREAM, ETC.

Three hundred and one samples of ice cream and 17 samples of so-called frozen custard were submitted by the Commissioner.

One unofficial sample of ice cream, two of ice cream mix and two of frozen custard were also examined for producers.

The State standard for fat content in plain ice cream is 8 per cent and for fruit and nut ice cream 6 per cent. Ice cream may be manufactured and sold, however, containing less than the above percentages of fat, provided proper declaration of the actual fat content is made. Experience has shown that there is very little inclination to market the substandard article under any circumstances. Only four samples below eight percent were found this year.

A Federal standard proposed several years ago fixing the fat content for plain ice cream at 12 per cent has never become official. The multiplicity of standards obtaining in the several states makes the adoption of a satisfactory Federal standard difficult, and perhaps it is unnecessary. The manufacturer who ships ice cream into several States may be embarrassed at times by conflicting State standards, but he will encounter the same difficulty under a Federal standard unless the States choose to revise their present laws and regulations to conform therewith.

A summary of the inspection of official samples is here given, and the results in detail appear in Table III.

Per cent of fat	No. of samples	Per cent of total
8.0 to 9.9	31	10.3
10.0 to 11.9	82	27.2
12.0 and above	184	61.1
7.9 and below	4	1.4
Total	301	100.0

TABLE III. ANALYSES OF ICE CREAM

No.	Flavor	Dealer	Manufacturer	Fat
		Ansonia		%
40647	Vanilla	J. Casagrande	Own make	8.4
40648	Vanilla	C. M. Georges	Own make	12.0
42594	Vanilla	Purity Tea Room	Own make	10.8
42593	Vanilla	Stever's North End Drug Store	Own make	14.4
40649	Vanilla	Venetas Bros.	Own make	11.8
42700	Strawberry	Venetas Bros.	Own make	11.2
		Branford		
40617	Vanilla	Branford Candy Shoppe	Tait Bros., New London	11.2
40618	Strawberry	Branford Candy Shoppe	Tait Bros., New London	9.0
41180	Vanilla	L. G. Shmouny	Harris-Hart, New Haven	10.6
		Bridgeport		
42821	Vanilla	Athens Confectionery Co.	Own make	14.8
42730	Vanilla	Atlantic Confectionery Co.	Own make	17.6
42824	Vanilla	Boston Candy Co.	Own make	14.2
42825	Vanilla	Bridgeport Lemon Ice Co.	Own make	10.4
42747	Vanilla	Candyland	Own make	13.0
42828	Vanilla	George Casteines	Own make	8.4
42733	Vanilla	Downy Flake Doughnut Shop	Mitchell Dairy Co., Bgpt.	17.0
42734	Orange-pineapple	Downy Flake Doughnut Shop	Mitchell Dairy Co., Bgpt.	13.2
42827	Vanilla	S. Gerstl	Own make	10.4
42732	Vanilla	Goodie Chocolate Shop	Own make	16.8
42736	Vanilla	Kozy Corner Store	Huber's, Bgpt.	13.2
42737	Strawberry	Kozy Corner Store	Huber's, Bgpt.	11.4
42731	Vanilla	Lane's	Own make	13.0
42830	Vanilla	Newfield Candy Co.	Own make	12.0
42748	Vanilla	Paradise Confectionery Co.	Own make	13.2
42735	Vanilla	Park City Spa	Own make	14.8
42829	Vanilla	Vincent Rossi	Own make	8.2
42826	Vanilla	Royal Candy Co.	Own make	11.0
42746	Vanilla	Strand Confectionery Co.	New Haven Dairy	12.0
42729	Vanilla	Venus Confectionery Co.	Own make	12.8
42822	Vanilla	Villari's Pharmacy	Park City I. C. Co., Bgpt.	13.6
42823	Strawberry	Villari's Pharmacy	Park City I. C. Co., Bgpt.	10.8
42728	Chocolate	J. Wakins	Huber's, Bgpt.	12.0
		Bristol		
41199	Vanilla	Central Lunch	Palace of Sweets, Plainville	14.4
42554	Vanilla	The Liberty Confectionery Co.	Own make	14.4
42550	Maple-nut	The Main Pharmacy	Eastern Dairies, New Britain	11.0
42551	Strawberry	The Main Pharmacy	Eastern Dairies, New Britain	9.6
41197	Vanilla	The Palace of Sweets	Own make	14.2
42553	Vanilla	The Soda Shoppe	Own make	14.0
41198	Vanilla	Sweetland Confectionery	Own make	14.0
		Brooklyn		
42846	Vanilla	J. W. Albro	Own make	13.2
		Canton		
42755	Vanilla	Margaret Dyer	.....	23.6

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat
		Collinsville		%
42596	Vanilla	Collinsville Candy Kitchen	Own make	15.8
		Columbia		
42796	Vanilla	Myrtle Collins	Own make	4.3
		Cos Cob		
42814	Vanilla	Mead's Pharmacy	J. M. Horton I. C. Co., N. Y.	15.6
42815	Strawberry	Mead's Pharmacy	J. M. Horton I. C. Co., N. Y.	12.6
42718	Vanilla	Taylor's Store	Breyer's I. C. Co., Phila.	12.8
		Danbury		
42974	Orange-pineapple	Crownland Soda Shop	General I. C. Corp.	8.8
42973	Vanilla	Danbury Candy Co.	Own make	11.6
42972	Vanilla	The Eagle Confectonery	Own make	13.2
42968	Vanilla	Nader and Libbos	Rider's I. C. Co.	13.0
42969	Strawberry	Nader and Libbos	Rider's I. C. Co.	11.2
42970	Vanilla	Palace Confectionery	Chester Hatch's I. C. Co.	12.6
42971	Strawberry	Palace Confectionery	Chester Hatch's I. C. Co.	12.0
		Danielson		
42839	Vanilla	Rexall Pharmacy	Dolbey's Fro-Joy	10.6
42840	Strawberry	Rexall Pharmacy	Dolbey's Fro-Joy	10.6
42841	Vanilla	Woodward Pharmacy	Hood's I. C. Co.	12.6
42842	Strawberry	Woodward Pharmacy	Hood's I. C. Co.	11.2
		Deep River		
40616	Vanilla	Hartford Candy Kitchen	New Haven Dairy	11.6
		Forestville		
42555	Vanilla	The Forestville Soda Shop	Crown I. C. Co.,New Britain	14.6
42556	Strawberry	The Forestville Soda Shop	Crown I. C. Co.,New Britain	10.2
		Greenwich		
42717	Vanilla	Greenwich Candy Shop	Neilsen's, N. Y.	16.4
42715	Vanilla	A. B. Libano Co.	Own make	15.8
42716	Strawberry	A. B. Libano Co.	Own make	12.8
42812	Vanilla	Palm Tea Room	Own make	15.2
42813	Vanilla	Rose Ely Goodie Shop	Own make	16.4
		Groton		
42955	Vanilla	Scuris Bros.	Own make	17.4
42956	Peach	Scuris Bros.	Own make	16.8
		Hartford		
42779	Vanilla	Besse's	Own make	14.8
42780	Peach	Besse's	Own make	15.2
42788	Vanilla	Capitol-Lyric Confectionery	Own make	14.6
41165	Vanilla	Ce Brook Ice Cream Co.	Own make	11.2
41166	Strawberry	Ce Brook Ice Cream Co.	Own make	9.6
41167	Chocolate	Ce Brook Ice Cream Co.	Own make	10.0
42787	Vanilla	Rosario Cippola	Own make	8.8

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat
		Hartford—Concluded		%
42774	Vanilla	Crown Confectionery	Own make	13.4
42781	Vanilla	Empire Delicatessen	General I. C. Co.	9.8
43525	Vanilla	The Federal Baking Co.	Reid's I. C. Co., N. Y.	11.4
43526	Strawberry	The Federal Baking Co.	Reid's I. C. Co., N. Y.	11.4
42773	Vanilla	G. Fox & Co.	Own make	18.6
42775	Vanilla	Henri's Wooster Shoppe	General I. C. Co.	11.2
42769	Vanilla	Highland Dairy Co.	Own make	12.6
42770	Strawberry	Highland Dairy Co.	Own make	12.6
42771	Vanilla	Jensen's	Own make	17.6
42772	Peach	Jensen's	Own make	14.8
42979	Strawberry	L & B Delicatessen	Ce Brook I. C. Co.	9.0
42980	Chocolate	L & B Delicatessen	Ce Brook I. C. Co.	9.8
43527	Vanilla	Loft, Inc.	Own make	14.2
43528	Strawberry	Loft, Inc.	Own make	11.8
41168	Chocolate	New Haven Dairy	Own make	10.8
41169	Vanilla	New Haven Dairy	Own make	11.4
41170	Strawberry	New Haven Dairy	Own make	9.6
42777	Vanilla	The New Paris	Own make	16.2
42778	Peach	The New Paris	Own make	17.8
42782	Vanilla	Patterson's Candyland	Own make	12.6
42785	Vanilla	Peter's' Soda Shop	Own make	14.6
42786	Strawberry	Peter's' Soda Shop	Own make	15.6
42776	Vanilla	Robbin's, Inc.	Own make	18.2
42789	Vanilla	Royal Candy Kitchen	Own make	10.8
42783	Vanilla	Shelton Lemon Ice Co.	Own make	9.8
42784	Vanilla	South Green Confectionery Co.	Own make	16.2
42754	Coffee	John Stiguel	Semon's	10.6
42790	Country Club Special	Thrall Pharmacy	Ce Brook I. C. Co.	11.0
		Hazardville		
42587	Vanilla	Geo. F. Conley	Hood's I. C. Co.	12.8
		Jewett City		
42849	Vanilla	Fred Maynard	Own make	14.0
		Lakeville		
42960	Vanilla	Leverty's Pharmacy	General I. C. Co.	10.8
42961	Strawberry	Leverty's Pharmacy	General I. C. Co.	10.4
		Lyme		
41179	Vanilla	Hall-Mark Chocolate Co.	.....	13.6
		Manchester		
42578	Vanilla	Manchester Candy Kitchen	Manchester Dairy I. C. Co.	15.2
42579	Strawberry	Manchester Candy Kitchen	Manchester Dairy I. C. Co.	12.6

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat
		Meriden		%
42761	Chocolate	Broderick Pharmacy	.....	9.4
42757	Vanilla	Billie Burns Candy Shoppe	Own make	13.8
42759	Vanilla	The Candy Box	Own make	13.8
42760	Vanilla	The Chocolate Shoppe	Own make	15.2
42756	Vanilla	Geo. Hartmann	O. D. Foote's I. C. Co.	14.4
42758	Vanilla	Katt Bros.	Own make	13.2
		Middletown		
40611	Orange-pineapple	Cubeta Bros.	Millbrook Dairy	12.4
40612	Strawberry	Cubeta Bros.	Millbrook Dairy	11.6
41176	Vanilla	Kresge's Dept. Store	Fro-Joy Brand	11.4
41177	Strawberry	Kresge's Dept. Store	Fro-Joy Brand	9.6
40613	Vanilla	Linbrook I. C. Co.	Own make	15.0
40614	Strawberry	Linbrook I. C. Co.	Own make	12.4
41178	Vanilla	Neville's Candy Shop	.....	16.2
41174	Vanilla	Olympia Candy Shop	.....	14.8
40615	Vanilla	Park St. Pharmacy	Millbrook Dairy	12.6
41175	Vanilla	Stueck & Son	.....	15.2
		Montville		
42950	Vanilla	Uncasville Candy Co.	Own make	16.4
		Moosup		
42845	Vanilla	Daggett's Ice Cream Store	Own make	21.8
		Mystic		
42951	Vanilla	Riverside Ice Cream Parlor	Own make	22.2
		Naugatuck		
40645	Vanilla	Naugatuck Dairy Ice Cream Co.	Own make	17.0
40646	Strawberry	Naugatuck Dairy Ice Cream Co.	Own make	9.8
		New Britain		
42981	Vanilla	Blew's Soda Spa	Millbrook I. C. Co.	12.0
42740	Vanilla	Burritt Hotel Soda Shoppe	New Haven Dairy	10.6
42982	Vanilla	Coutaras Bros.	Ce Brook I. C. Co.	11.2
42983	Lemon	Coutaras Bros.	Ce Brook I. C. Co.	11.4
42738	Vanilla	Elmain Garden	New Haven Dairy	11.0
42739	Strawberry	Elmain Garden	New Haven Dairy	9.4
42809	Maple-nut	Kaufman's Store	Nelson's Purity, Inc.	13.8
42804	Vanilla	Star Confectionery	Own make	15.8
42805	Vanilla	St. Clair Confectionery	Own make	15.2
42806	Vanilla	West End Drug Store	Coon's Fro-Joy	11.2
42807	Strawberry	West End Drug Store	Coon's Fro-Joy	8.6
		New Canaan		
42975	Vanilla	Olympia Candy Co.	Own make	16.4
		New Haven		
41183	Vanilla	Basil's Confectionery	.....	10.8
42572	Vanilla	Beaver Confectionery	Own make	11.4

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat
		New Haven—Concluded		%
42573	Vanilla	Boulevard Candy Shop	Own make	12.2
42562	Vanilla	Bouzoucos Bros.	Own make	12.6
42568	Vanilla	De Lupe Bros.	Own make	12.6
40623	Vanilla	Crescent Drug Co.	Semon's	10.8
40624	Strawberry	Crescent Drug Co.	Semon's	9.8
42564	Vanilla	Cummings Bros.	Own make	12.4
40632	Vanilla	Peter Daniels	Own make	9.8
40622	Vanilla	Liberato Dellamura	Own make	9.2
42569	Vanilla	I. Dickstein	Own make	10.0
42571	Vanilla	Edgewood Soda Shoppe	Own make	9.6
41185	Vanilla	D. Felice	.....	8.8
41186	Vanilla	Gabriel's Ice Cream Parlor	.....	11.0
42575	Vanilla	Garden Drug Store	Sagal-Lou I. C. Co.	11.4
42576	Strawberry	Garden Drug Store	Sagal-Lou I. C. Co.	9.6
41187	Vanilla	Grand Confectionery Co.	.....	10.0
42565	Vanilla	John Gilbert & Son	Own make	11.4
42566	Vanilla	House of Hasselbach	Own make	13.4
41196	Vanilla	Howard Ice Cream Parlor	.....	13.6
42577	Vanilla	Huntington Confectionery	Own make	10.8
42563	Vanilla	Kum-On-Inn Shop	Own make	9.8
42741	Brick	Liggett's' Drug Store	Consolidated Dairy Products Co., Long Island City, N. Y.	10.2
41188	Strawberry	L. Liscio	Harris-Hart	12.4
40621	Vanilla	Olympia Candy Kitchen	Own make	10.6
41184	Vanilla	Original Olympia Candy Co.	.....	10.0
40625	Vanilla	Palace of Sweets	.....	12.4
40626	Strawberry	Palace of Sweets	New Haven Dairy	9.6
40619	Vanilla	Polos Confectionery Co.	Own make	10.4
40620	Orange-pineapple	Polos Confectionery Co.	Own make	9.4
41189	Chocolate	Polos Confectionery Co.	Own make	7.4
42567	Vanilla	Mrs. Root's Food Shop	Own make	11.6
42976	Vanilla	The Smoke Shop	Brock-Hall Co.	14.0
42977	Strawberry	The Smoke Shop	Brock-Hall Co.	12.8
42570	Vanilla	Sweetland Confectionery Co.	Own make	10.8
41181	Vanilla	Peter Villani	.....	10.6
41182	Peach	Peter Villani	.....	9.0
42574	Vanilla	Westville Confectionery Co.	Own make	10.6
		New London		
41172	Vanilla	Boston Candy Kitchen	Own make	16.8
40608	Vanilla	Conti Bros.	Own make	19.6
40601	Vanilla	Capitol Candy Kitchen	Own make	15.2
40602	Vanilla	Garde Catering Co.	Own make	18.8
40610	Vanilla	Liberty Candy Kitchen	Own make	16.6
40605	Vanilla	A. J. Maloof	Own make	12.4
40606	Orange-pineapple	A. J. Maloof	Own make	10.8
40607	Vanilla	A. J. Maloof	Own make	11.8
40603	Vanilla	Mohican Hotel Candy & Soda Shoppe	Own make	22.0

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat
		New London—Concluded		%
40600	Vanilla	John Nichols	Own make	19.8
41171	Vanilla	Petersen's Tea Room	Own make	20.0
40609	Vanilla	G. P. Photos	Own make	13.2
40604	Strawberry	Victory Candy Shop	Own make	16.2
41173	Vanilla	M. Y. Vong's Sweet Shoppe	Own make	14.4
		New Milford		
42962	Vanilla	Arthur Bona	Own make	13.6
42963	Vanilla	Hipp's Ice Cream Store	Own make	12.8
42964	Orange-pineapple	Hipp's Ice Cream Store	Own make	12.8
42965	Vanilla	George Nichols	Own make	11.2
42966	Orange-pineapple	Park Pharmacy	Fro-Joy Brand	10.2
42967	Vanilla	Park Pharmacy	Fro-Joy Brand	11.0
		Niantic		
42959	Vanilla	Arthur Lockwood	Own make	10.4
		Norwalk		
42725	Vanilla	Golden's	Own make	14.8
42727	Vanilla	Main Confectionery Co.	New Haven Dairy, Bgpt.	11.2
42726	Vanilla	Peter's Sweet Shop	Own make	14.4
42820	Vanilla	Thomas Soda Shop	Own make	19.2
		Norwich		
42711	Vanilla	The Arcadia	Own make	17.6
42803	Strawberry	G. Lacahera	A. J. Maloof, New London	10.6
42709	Vanilla	Norwich Dairy Ice Cream Co.	Own make	15.4
42710	Strawberry	Norwich Dairy Ice Cream Co.	Own make	14.6
42708	Vanilla	Olympia Candy Kitchen	Own make	12.6
42714	Vanilla	Pitcher & Service	Dairymaid Ice Cream Co., Worcester, Mass.	13.8
42801	Vanilla	Sellas Spa	Own make	17.2
42802	Strawberry	Sellas Spa	Own make	15.4
42800	Vanilla	The Terminal Restaurant	Own make	17.8
42712	Vanilla	C. C. Treat	Own make	17.4
42713	Orange-pineapple	C. C. Treat	Own make	18.6
		Pawcatuck		
42953	Vanilla	Greek-American Co.	Own make	26.0
		Plainfield		
42847	Vanilla	The Maples	Kelly's	13.4
42848	Peach	The Maples	Kelly's	11.0
		Plainville		
42808	Vanilla	Kaufmann's Store	Nelson's Purity Ice Cream Co.	14.0
42558	Strawberry	The Palace of Sweets	Own make	14.4
42557	Strawberry	Rialto Soda Shop	Ce Brook Ice Cream Co.	8.8

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat, %
		Plainville—Concluded		
42559	Vanilla	The Thrall Pharmacy	R. H. Worden & Sons Co., Waterbury	13.4
42560	Strawberry	The Thrall Pharmacy	R. H. Worden & Sons Co., Waterbury	12.0
		Pomfret		
42831	Vanilla	Allard's	Own make	30.0
		Putnam		
42838	Coffee	D. Allard	Fro-Joy Brand	11.0
42836	Strawberry	W. B. Carroll, Rexall Drug Store	Turner Center I. C. Co.	11.6
42837	Vanilla	Olympia Candy Co.	Own make	20.2
42835	Vanilla	Progress Confectionery Co.	Own make	14.8
42832	Vanilla	United Cigar Stores	Crown Quality I. C. Co.	14.6
42833	Strawberry	United Cigar Stores	Crown Quality I. C. Co.	13.8
		Rockville		
40634	Vanilla	S. H. Conners	Tait Bros., Spfld.	10.8
40633	Vanilla	John E. Gawtrey	Own make	13.0
42582	Vanilla	Peter's Chocolate Shop	Own make	14.4
		Seymour		
42592	Vanilla	Kalardis Bros.	Own make	10.4
		Shelton		
42595	Vanilla	E. J. Barton	Own make	15.4
		Somers		
40638	Chocolate	Mrs. Herbert N. Kibbe	Hood's I. C. Co.	14.4
42585	Vanilla	Somers Tea Room	Turnbull's I. C. Co.	15.0
42586	Strawberry	Somers Tea Room	Turnbull's I. C. Co.	13.8
		Southington		
42561	Vanilla	The Candy Shoppe	Own make	12.0
		South Manchester		
42580	Vanilla	The Coffee Shoppe	C. C. Treat I. C. Co.	17.2
42581	Strawberry	The Coffee Shoppe	C. C. Treat I. C. Co.	16.4
		South Norwalk		
42724	Vanilla	The Mahackamo	Own make	15.0
42819	Vanilla	Palace Confectionery	Own make	12.6
		Stafford Springs		
40635	Vanilla	Louis Campo	Own make	14.4
40636	Strawberry	Louis Campo	Own make	13.6
42583	Vanilla	P. J. Murray	Own make	14.4
40637	Vanilla	E. J. Parizean	Own make	17.2
42584	Chocolate	Stafford Candy Kitchen	Fro-Joy Brand	11.0

TABLE III. ANALYSES OF ICE CREAM—*Continued*

No.	Flavor	Dealer	Manufacturer	Fat,
		Stamford		%
42810	Vanilla	Maplehurst Dairy Co.	Own make	16.0
42811	Strawberry	Maplehurst Dairy Co.	Own make	15.2
42719	Vanilla	Massoletti's	Own make	14.6
42720	Peach	Massoletti's	Own make	9.8
42721	Vanilla	Olympia Candy Shop	Own make	12.6
42818	Vanilla	Stamford Health Food Store	Rider's I. C. Co.	13.0
42723	Vanilla	Star Confectionery Co.	Own make	16.0
42722	Vanilla	Strand Confectionery Co.	Own make	15.6
42817	Vanilla	Whelan's Drug Store	Cons. I. C. Co., N. Y.	14.8
		Thompson		
42834	Coffee	Vernon Stiles Inn	Own make	12.8
		Thompsonville		
42588	Vanilla	A. Tatoian	Own make	15.2
		Torrington		
42597	Vanilla	Allen Candy Co.	Own make	11.6
42751	Vanilla	Jacob's Bros.	Own make	14.4
42752	Strawberry	Jacob's Bros.	Own make	13.6
42598	Vanilla	Olympia Candy Kitchen	Own make	14.6
42599	Vanilla	Rexall Drug Store	Torrington Creamery Co.	11.2
42750	Strawberry	Rexall Drug Store	Torrington Creamery Co.	11.2
		Wallingford		
42763	Chocolate	O. D. Foote	Own make	13.4
42764	Peach	O. D. Foote	Own make	13.2
42762	Vanilla	J. H. Griffin	Own make	15.0
42766	Vanilla	A. Pappas	Own make	12.0
42767	Chocolate	A. Pappas	Own make	12.6
42765	Vanilla	The Sugar Bowl	Own make	15.2
		Wauregan		
42844	Vanilla	H. J. Fournier	Own make	13.4
42843	Vanilla	Mrs. A. J. Hope	Fro-Joy Brand	14.4
		West Haven		
40631	Vanilla	Big Y Drink Stand, Savin Rock	.....	3.8
41191	Vanilla	Cameo Confectionery Co.	.....	11.4
42791	Vanilla	A. Goldman, Savin Rock	Clark's Dairy	10.2
42792	Strawberry	A. Goldman, Savin Rock	Clark's Dairy	8.8
40628	Vanilla	Goraieb Co., Savin Rock	Sagal-Lou Co.	10.6
41195	Vanilla	R. R. Grove Midway, Savin Rock	Clark Dairy	11.0
41190	Vanilla	Thompson's Spa	.....	13.4

TABLE III. ANALYSES OF ICE CREAM—*Concluded*

No.	Flavor	Dealer	Manufacturer	Fat
		Waterbury		%
40642	Vanilla	The Allen Candy Shop	Own make	14.2
40641	Vanilla	The Candy Shoppe	New Haven Dairy	10.6
40643	Vanilla	A. Magi	Whelan's I. C. Co.	11.2
40644	Pineapple	A. Magi	Whelan's I. C. Co.	10.0
42591	Strawberry	Martin's Pharmacy	R. F. Worden & Sons Co.	11.6
42590	Vanilla	Martin's Pharmacy	R. F. Worden & Sons Co.	13.2
42589	Vanilla	Puritan Tea Room	Own make	16.4
		Westerly		
42954	Vanilla	George Bailey	Maine I. C. Co.	16.2
		Willimantic		
42797	Vanilla	C. J. Albro	Own make	19.0
42799	Vanilla	Bay State Pharmacy	Hood's I. C. Co.	13.2
42706	Vanilla	Hallock's, Inc.	B. C. Hallock	14.6
42707	Strawberry	Hallock's, Inc.	B. C. Hallock	13.6
42705	Vanilla	Michael Longo	Bushway I. C. Co.	12.4
42798	Vanilla	Thread City Candy Kitchen	Own make	13.8
		Windsor Locks		
40639	Vanilla	DeFocie Bros.	Somers Creamery Co., Spfld.	12.8
40640	Strawberry	DeFocie Bros.	Somers Creamery Co., Spfld.	11.2
		Winsted		
42753	Maple-walnut	Highland Sweet Shop	Torrington Creamery Co.	12.2
		Address Unknown		
42552	Vanilla	Central Drug Co.	Ce Brook I. C. Co.	10.4

MEAT PRODUCTS, ETC.

HAMBURG STEAK

Nineteen samples of hamburg steak were tested for sulfites and four were found to contain amounts ranging from 540 to 2,209 milligrams per kilo.

Salts of sulfurous acid are not permissible admixtures in meat products. Sulfites cause a reddening of the meat tissue, which makes it appear fresh longer than it would without such treatment. Moreover, they conceal the odor of decomposition without materially checking the decomposition process, wherein lies the chief objection to their use.

Meat thus preserved was obtained at the American Market, Bristol, and at the Boston Market and Economy Markets, Meriden.

FRANKFURTS

Nine samples of frankfurts were examined and all but one were misbranded by reason of failure to declare the presence of cereal or other starchy material. Cereal up to 3.5 per cent is allowable provided declaration of its presence is made but more than 3.5 per cent is not permitted even if declared.

Misbranded products were obtained at the Dwan Co., Torrington; the Fairfield Provision Co., Stamford; Eastern Provision Co., Public Market, International Market, and Frank Luzzi, all of Hartford; Stevens and Roth, Bristol; and William Stange, Meriden.

The prevalence of misbranded frankfurts is not to be judged by the large proportion shown by the data here recorded. The inspector makes qualitative tests and brings only suspicious samples to the laboratory.

Fifteen unofficial samples were also examined.

PORK SAUSAGE

Twenty samples of pork sausage were submitted by the Commissioner. One was misbranded because of an excessive amount (4.5 per cent) of starchy material.

Moisture and nitrogen were determined in order to get indications of excessive water. It has been found by comprehensive study that water in the meats commonly used in sausage making does not exceed 25 times the nitrogen (or four times the protein, using the factor 6.25) content. In three instances the application of this formula indicated excessive moisture in amounts ranging from 6.5 to 11 per cent.

MEAT LOAF SEASONING

Mumsie-Mix, 40927, submitted by the Commissioner, appeared upon examination to consist essentially of corn starch, salt and various spices such as sage, red pepper, mustard, etc. It is a seasoning mixture.

MILK, AND MILK PRODUCTS

MARKET MILK

One hundred and twelve official samples of milk were submitted by the Dairy and Food Commissioner.

The summary of the inspection shows a considerable proportion of samples adulterated by skimming. This is because a survey was made of places where milk was found being dispensed by the glass rather than in bottles. Adulterated samples are listed in Table IV.

SUMMARY OF INSPECTION

	No. of samples	Per cent
Not found adulterated	50	44.6
Adulterated by watering	5	4.5
Adulterated by skimming	31	27.7
Below standard:		
in solids and solids-not-fat	10	8.9
in solids and fat	7	6.3
in solids, fat and solids-not-fat	9	8.0
Totals	112	100.0

In addition to official samples submitted by the Commissioner, 53 samples were tested for consumers and producers.

CHOCOLATED SKIMMED MILK

Four samples of chocolate-skimmed milk products were examined and found to contain from 0.6 to 1.8 per cent of fat.

BUTTERMILK

One sample of semi-solid buttermilk was examined for a purchaser. It contained 27.4 per cent of solids.

EVAPORATED MILK

One sample was examined. It contained 25.7 per cent of solids and 8 per cent of fat, the sum of solids and fat being 33.7. This meets the State standard for products of this type.

POWDERED WHOLE MILK

A sample of Klim Powdered Whole Milk, made by the Borden Co., was analyzed as follows:

Moisture	1.98%
Ash	5.99
Protein (N x 6.38)	25.64
Sugar (by difference)	38.41
Fat	27.98

CREAM

Two samples of cream were tested. One of them was suspected of containing preservative, but no evidence of such substances was found.

TABLE IV. ADULTERATED MILK

No.	Dealer	Solids	Fat
	Containing Added Water	%	%
	Bantam		
40656	Perry Howland	7.11	2.3
40657	Perry Howland	6.91	2.3
	Bridgeport		
43117	Geo. Pappas	11.00	3.6
43144	H. Kiekel	10.58	2.9
	Falls Village		
43365	Mrs. Francis Malnati	9.92	2.7
	Skimmed Milk		
	Ansonia		
43069	P. Haggis	10.70	1.9
43066	Angelo Musante	10.98	2.2
43065	J. K. Wislocki	10.35	1.6
	Branford		
42889	Branford Pharmacy	10.08	1.4
42888	Michael Torello	11.63	2.7
	Bridgeport		
43140	Joseph Cuneo	10.54	1.8
43125	Abraham Freer	9.68	1.5
43139	P. Fanculli	10.22	1.7
43136	D. Fialk	9.75	1.6
43123	James Forskrotes	9.62	1.2
43118	H. Freudenbein	8.99	0.7
43133	Louis Garabaldi	9.70	1.1
43135	Andrew Genci	10.81	2.3
42857	R. Gerstl	9.48	0.9
42852	Anthony Gerth	9.24	0.8
43124	Boghoz Laglagian	10.57	2.1
43134	Louis Levy	10.47	2.5
43127	F. Maglione	9.79	1.8
42851	Veronica Miller	10.80	2.5
42850	John Trifon	11.44	2.5
	Danbury		
42886	Danbury Confectionery	10.68	1.9
	Derby		
43072	Debarbieri & Masante	10.96	1.9
	East Haven		
42890	M. Levine	10.10	1.6

TABLE IV. ADULTERATED MILK—*Concluded*

No.	Dealer	Solids	Fat
	Skimmed Milk—*Concluded*	%	%
	New Canaan		
42866	Olympia Candy Co.	10.93	2.5
	New Haven		
42868	A. Gabriela	11.10	2.6
42867	A. Wolfson	10.74	2.0
	Ridgefield		
42876	G. A. Mignerey	12.05	2.2
	Waterbury		
43059	Frank Carissimi	11.04	2.4
43055	Kenyon's Hillside Pharmacy	9.55	0.9
43053	W. L. Costen	11.13	2.5
43050	A. Rizk & Son	10.20	1.6

CIDER VINEGAR

The law requires that vinegar (cider vinegar) shall contain not less than 1.6 per cent of solids and not less than four per cent of acidity. The Federal standard has been revised so that the only numerical standard is that for acid strength, viz., four per cent. Since it is now known that genuine vinegar may sometimes contain less than 1.6 per cent of solids it may be unfair to adhere strictly to that limit.

In the inspection carried on by the Commissioner during the past year cider vinegar was called for in all cases.

Three hundred and forty samples were submitted for examination. In most cases products of the substance and quality asked for were obtained as judged by acid strength, solids and other characters.

Forty-five samples were clearly not cider vinegar as shown by negative or faint Hortvet tests and by low solids, generally of a magnitude between 0.2 and 0.6 per cent, which characterize molasses or syrup vinegars. These were purchases of vinegar in bulk.

Nineteen were considerably deficient in acid strength.

Twenty were of legal acid strength but did not meet the required 1.6 per cent of total solids. With some tolerance many of these could probably be passed without serious objection. There were a number, however, showing solids of about one per cent which

were regarded with suspicion. One of these was examined in more detail, the analysis being compared with recorded analyses of genuine vinegar and with vinegar diluted with water. The composition of the suspected sample corresponded to that of a reduced vinegar but the manufacturer gave assurance that it had not been diluted. It was explained that the vinegar in question represented a mixture of genuine vinegars from vinegar stocks of several different years. Analyses of these component vinegars showed substantially the same composition as that of the finished product as regards potential acidity and other characters. The only sample of vinegar stock available for examination had no direct connection with the suspected vinegar, as it represented the product of another season. However, its potential acidity was very different (higher) from that of the vinegar in question, and other values were within the limits of recorded analyses for vinegar stock.

The examination of further samples from this source with more exact histories seemed desirable before reaching final conclusions about this particular product.

In addition to samples examined for the Commissioner, five were analyzed for producers or purchasers.

The total, including samples for investigational purposes, is 351.

DRUGS

Contrary to the usual practice, the drugs examined this year have been taken chiefly from general stores in smaller towns where drugs may be dispensed, if they are sold in original containers and bear the label of a licensed pharmacist, as provided by the regulations of the State Board of Pharmacy. It was thought that the quality of such drugs might be inferior by reason of deterioration due to less rapid turnover of stock. Whether or not this is a reasonable hypothesis, such stocks are, of course, subject to inspection on the same basis as drugs sold in larger establishments in cities.

The results of this inspection show that the proportion of drugs found to be below standard is not greater than that observed when inspection is confined to larger dispensing centers. The proportion is almost exactly the same as was found in the inspections of the two immediately previous years when inspections were confined to larger towns and cities of the State.

It is true, of course, that drugs found on sale in general stores are in all cases products of the same manufacture as are found on the shelves of wholesale and retail druggists, and the results, so far as can be learned from these data, do not indicate that drugs purchased in general stores in country towns are any more likely to be substandard than are the same articles purchased in the city drug store.

AROMATIC SPIRITS OF AMMONIA

According to the formula for the preparation of this article the finished product should contain 1.84 gms. of ammonia (NH_3), in each 100 cc. of solution. The alcoholic strength should be from 62 to 68 per cent by volume.

Seven samples were examined, four of which were of the quality and strength required, and three were somewhat deficient in ammonia.

TABLE V. ASSAY OF AROMATIC SPIRITS OF AMMONIA

No.	Dealer	Manufacturer	Ammonia, gms/100 cc.	Alcohol by vol. %
	Columbia			
42934	H. W. Porter	Charles Osgood Co., Norwich	1.88	63.20
	Cornwall Bridge			
42947	H. W. O'Dell	C. W. Whittlesey Co., New Haven	1.85	64.40
	East Berlin			
42911	Robert Cole	Sisson Drug Co., Hartford	1.42	69.85
	Granby			
42907	H. L. Cowles	Williams & Carlton Co., Hartford	1.99	68.00
	Moodus			
43709	W. J. Thomas & Son	Sisson Drug Co., Hartford	1.54	70.05
	Southington			
43736	E. W. Ferguson	United Chemists, Jersey City	1.48	62.35
	Thompsonville			
43717	David Dixon	Superba Products Co., Boston	1.84	64.55

LIME WATER

Solution of calcium hydroxide (lime water) should contain not less than 0.14 gm. of calcium hydroxide at 25° C. It will contain about 0.17 gm. at 15° C., the amount diminishing as the temperature rises.

The five samples examined were all of standard quality.

TABLE VI. ASSAY OF LIME WATER

No.	Dealer	Manufacturer	Calcium hydroxide, gms/100 cc.
	Cobalt		
43706	Ed. Elkin	Williams & Carlton Co., Hartford	0.17
	Moodus		
43710	W. J. Thomas & Son	Sisson Drug Co., Hartford	0.16
	Northford		
43728	Johnson Bros.	Williams & Carlton Co., Hartford	0.15
	North Stonington		
42939	Brown & Stone	Charles Osgood Co., Norwich	0.15
	Thompsonville		
43718	David Dixon	Cabot Drug Store, Chicopee, Mass.	0.15

SPIRIT OF CAMPHOR

This preparation should contain not less than 9.5 gm. nor more than 10.5 gm. of camphor in each 100 cc. of solution.

Nine samples were analyzed and all were within the limits of the standard or reasonably close to those limits.

TABLE VII. ASSAY OF SPIRIT OF CAMPHOR

No.	Dealer	Manufacturer	Camphor, gms/100 cc.
	Cornwall Bridge		
42949	H. W. O'Dell	C. W. Whittlesey Co., New Haven	10.6
	East Berlin		
42910	Robert Cole	Sisson Drug Co., Hartford	11.0
	Moodus		
43708	Purple & Silliman	Sisson Drug Co., Hartford	10.5
	Old Mystic		
42941	W. S. Walbridge	Charles Osgood Co., Norwich	11.2
	Quinnebaug		
43713	Fred E. Willette	Charles Osgood Co., Norwich	10.3
	Rock Fall		
43725	Collins & Lindemark	Williams & Carlton Co., Hartford	8.9
	Southington		
43737	E. W. Ferguson	Apothecaries Hall Co., Waterbury	9.5
	Tariffville		
42905	B. F. Farrell	Foley & Co., Chicago	10.6
	West Goshen		
42946	H. H. Ives	Williams & Carlton Co., Hartford	10.4

SPIRIT OF ETHYL NITRITE

This preparation, also called sweet spirit of nitre, should contain not less than 3.5 nor more than 4.5 per cent of ethyl nitrite ($C_2H_5NO_2$).

An important consideration in keeping this product, and one that is emphasized in the United States Pharmacopoeia, is that it shall be kept in small, well stoppered, amber bottles in a cool, dark place, remote from fire.

The large proportion of substandard samples found in this and other inspections is no doubt due largely to failure to observe these precautions.

Thirteen samples were examined, of which six were passed.

TABLE VIII. ASSAY OF SPIRIT OF ETHYL NITRITE

No.	Dealer		Ethyl Nitrite, %
	Addison		
42931	Addison Cash Grocery	Hartford Drug Co., Hartford	3.0
	Cobalt		
43704	Ed. Elkin	Sisson Drug Co., Hartford	3.3
	Columbia		
42932	H. W. Porter	Charles Osgood Co., Norwich	2.3
	Cornwall Bridge		
42948	H. W. O'Dell	C. W. Whittlesey Co., New Haven	3.2
	Granby		
42906	H. L. Cowles	Williams & Carlton Co., Hartford	4.7
	Hartford		
43729	Sunlight Grocery	Sisson Drug Co., Hartford	4.2
	Quinnebaug		
43712	Fred E. Willette	Charles Osgood Co., Norwich	2.3
	Rock Fall		
43726	Collins & Lindemark	Williams & Carlton Co., Hartford	2.5
	South Coventry		
42937	L. M. Phillips	Fraser Tablet Co., Inc., Brooklyn N. Y.	3.9
	Southington		
43735	E. W. Ferguson	United Chemists, Jersey City, N. J.	0.4
	South Woodstock		
42921	R. K. Safford	S. Kidder & Co., Boston	3.0
	Thompsonville		
43715	David Dixon	Cabot Drug Co., Chicopee, Mass.	2.6
	West Goshen		
42944	H. H. Ives	Williams & Carlton Co., Hartford	3.4

TINCTURE OF IODINE

Tincture of iodine should contain not less than 6.5 gms. nor more than 7.5 gms. of iodine, and not less than 4.5 gms. nor more than 7.5 gms. of potassium iodide in each 100 cc. of solution.

Ten samples were examined, only one of which was notably deficient.

TABLE IX. ASSAY OF TINCTURE OF IODINE

No.	Dealer	Manufacturer	Iodine, gms/100 cc.	Potass. iodide, gms/100 cc
	Bloomfield			
42902	L. R. Ladd	American Lab., Inc., Richmond, Va.	5.8	4.9
	Collinsville			
42913	Philip Reichert	Dill Co., Morristown, Pa.,	6.4	4.6
	Columbia			
42933	H. W. Porter	Charles Osgood Co., Norwich	6.7	4.9
	Cornwall Bridge			
43700	H. W. O'Dell	C. W. Whittlesey Co., New Haven	6.7	4.7
	East Berlin			
42909	Robert Cole	Sisson Drug Co., Hartford	7.0	5.1
	Granby			
42908	Loomis Bros. Co.	Williams & Carlton Co., Hartford	7.0	5.0
	North Woodstock			
42920	O. Milligan	Lee & Osgood Co., Norwich	7.1	5.2
	Old Mystic			
42942	W. S. Walbridge	.. ..	6.6	4.8
	Quinnebaug			
43714	Fred E. Willette	Charles Osgood Co., Norwich	6.7	4.9
	South Coventry			
42938	L. M. Phillips	United Drug Co.	6.8	5.0

SOLUTION OF MAGNESIUM CITRATE

This product should contain not less than 1.5 gms. of magnesium oxide (MgO), in each 100 cc. of solution. The specifications further require not less than 3.3 gms. of free citric acid and not less than 9.8 gms. of total citric acid in 100 cc.

Eight samples were submitted. Three were passed and five were below standard in one or more particulars. All were sold

upon request for solution of magnesium citrate or "citrate of magnesia." One, however, was labelled "Citro" with the further information that the article was a substitute for the U. S. P. product, and the formula was given. Another was labelled "Aperient" magnesia and two were labelled to show that they were made according to the specifications of the ninth revision of the Pharmacopoeia instead of the text now official.

"Citro" was deficient in total citric acid even on the basis of the declared formula, but in other respects conformed to the declaration.

Aperient magnesia was low in magnesia and in total citric acid for the U. S. P. article. The term "aperient" is as correctly applied to the standard U. S. P. product as to a substandard product so that such designation is not sufficiently descriptive to indicate to the consumer the substandard character of the article.

Sample 42925 was labelled U. S. P.: IX but it was low in total

TABLE X. ASSAY OF SOLUTION OF CITRATE OF MAGNESIA

No.	Dealer	Manufacturer Manufacturer	MgO, gms/100 cc.	Free citric acid, gms/100 cc.	Total citric acid, gms/100 cc.
	Beacon Falls				
42925	Peoples Grocery (U. S. P. IX)	Apothecaries Hall Co., Waterbury	1.6	2.5	8.3
	Berlin				
42912	J. Cole (Aperient)	Sisson Drug Co., Hartford	1.2	4.0	8.5
	Cornwall Bridge				
43701	H. W. Breen (Citro)	Williams & Carlton Co., Hartford	1.1	2.0	6.4
	Hamden				
43738	Robert Reinwald	Charles S. Leete Co., Inc., New Haven	1.6	2.4	8.4
43739	M. Tomassi	Superior Drug Co., Stamford	1.6	2.3	8.1
	North Stonington				
42940	Brown & Stone	Sterling Magnesia Co., New York	1.6	3.8	9.6
	South Woodstock				
42922	R. K. Safford	McCambridge Co., Washington, D. C.	1.5	3.9	9.3
	Tariffville				
42903	B. F. Farrell	National Magnesia Co., Brooklyn, N. Y.	1.6	3.8	9.5

citric acid on the basis of that standard. Sample 43739 was similarly labelled but it was deficient in free citric acid and in total citric acid.

There is apparently some difficulty in preparing this official solution to fully meet the standard for total citric acid although it can be made closely to approximate the standard. An experimental mixture made in the laboratory showed 9.65 grams total citric acid instead of the calculated value of 9.81 and a sample of freshly prepared stock, submitted at our request by a local druggist, was also slightly under the required value. However, with ingredients of U. S. P. purity there should be no difficulty in preparing a product that will pass inspection with a reasonable tolerance.

ESSENCE OF PEPPERMINT

According to the formula given in the U. S. P. this article should contain 10 per cent of peppermint oil per 100 cc.

Four samples were examined. Two were satisfactory, one was somewhat over strength and one was labelled "extract" but was below standard for that product. Extract should contain 3.0 per cent of oil.

TABLE XI. ASSAY OF ESSENCE OF PEPPERMINT, ETC.

No.	Dealer	Manufacturer	Oil of Peppermint %
	Moodus		
43707	Purple & Silliman	Sisson Drug Co., Hartford	11.9
	South Coventry		
42936	L. M. Phillips	Continental Drug Corp., St. Louis, Mo.	10.7
	Thompsonville		
43716	David Dixon	Eastern Drug Co., Boston	10.8
	West Goshen		
42945	H. H. Ives (Extract)	Williams & Carlton Co., Hartford	2.5

COMPOUND MIXTURE OF RHUBARB

From the formula for this preparation it is calculated that 100 cc. should contain from .004 to .005 gm. of ipecac alkaloids and 3.5 gms. of bicarbonate of soda.

The one sample examined contained 3.8 gms. of sodium bicarbonate and .014 gm. of mixed alkaloids. The alkaloidal residue was evidently contaminated and the value is no doubt too high. Tests for rhubarb were positive.

MISCELLANEOUS

DRUGS AND OTHER MATERIALS

The following materials, 21 in number, have been examined for the Dairy Food Commissioner, local health officers or other officials interested:

42985. *Alcohol.* Contained 3.8 per cent of methyl alcohol by volume. Total alcohols 43.25 per cent.

1148, 1149. *Apples.* These were examined for spray residue and 0.0016 and 0.0015 grains of arsenic (As_2O_3) per pound of fruit were found. These amounts are well within the limit at present allowed, viz., 0.01 grain per pound.

2718. *Coal* (Station sample). Water 1.10 per cent; ash 6.47 per cent; volatile combustible matter 20.2 per cent; fixed carbon 72.23 per cent; sulfur 0.94 per cent.

768. *Cod liver oil.* Free fatty acids as, oleic acid, 0.53 per cent; saponification No. 183.0; iodine No. 166.7; unsaponifiable 0.26 per cent; vitamin test, color value 26. Constants meet U. S. P. specifications. Color value indicated a probably satisfactory vitamin A content.

1359, 1360. *Cod liver oil.* For poultry feeding. There is no reliable way of comparing the two oils as to vitamin potency except by feeding trials. Color values for vitamin A indicated relatively large amounts of this factor, the respective values being 75 and 60.

2050. *Dr. De Pew's Prescription 10,010.* Sample submitted by a patient. Advertising literature emphasizes the benefits to be derived from the administration of gland tissue or extracts and it is implied that this "treatment" contains such substances. The tablets were found to consist of, or to contain, starch, calcium phosphate, strychnine in medicinal quantity, a trace of iodine and some nitrogenous material. Thyroid or a similar gland tissue may be present.

2428. *Doz-it.* A medicated stock salt, Farmers Medicated Stock Salt Co., Mifflinburg, Pa. It was found to consist of, or to contain, chiefly common salt with some charcoal, Epsom salt and iron sulfate. Advertising literature is objectionable because there is no known medicine that will prevent abortion; nor is it at all likely that this salt will prevent cholera as the circular implies.

3102. *F. L. P.* A pickling and curing compound for meats said to consist of salt and saltpetre. It was found to contain about 75 per cent of salt and 25 per cent of nitrate of soda. Both of these substances are permissible preservatives for meats. The term "saltpetre," however, applies to potassium nitrate rather than to sodium nitrate. The latter is known as Chili saltpetre.

748. *Hall's Muneac.* Hall Remedy Co., Tampa, Fla. The medicine was described as a wonderful remedy for rheumatism and diseases arising from uric acid in the system. It was a mixture of hydrochloric and nitric acids and contained some free chlorine. Acidity 2.51 normal. Dilute nitrohydrochloric acid (N.F. 5) would have a total acidity of about 2.8 normal.

2177. *Liquid soap.* Analysis: water 83.5 per cent; ash 2.88 per cent; free potassium hydroxide none; free potassium carbonate 0.24 per cent; fatty acids 8.95 per cent; soap (fatty acids + combined K_2O), 10.68 per cent; non-soap ash 0.10 per cent; undetermined 5.5 per cent. Evidently a potassium oleate soap.

975. *Normacol.* A laxative preparation. Sample consisted of, or contained, agar-agar and a vegetable cathartic, probably senna extract, coated with chocolate.

43524. B. Paul's Henna. Nature's Hair Restorer. Said to be a mixture of henna, herbs and other harmless ingredients. There were two separate

powders. One was a brownish-green substance, which was apparently the dye proper. The other was marked "developer." The brownish powder contained copper and iron in quantity, was acid to litmus, and contained tannic acid. Crystals of copper sulfate could be seen under the microscope. Paraphenylenediamine test negative. Coal tar color may be present. Wool was dyed brown and the color could be partially removed with ammonia and a redye made. The "developer" was alkaline to litmus and to phenolphthalein. No organic matter was present. Tests for sodium, peroxide and borate were positive. The preparation evidently owes its coloring properties to the reaction between the metals and tannic acid by which cupric and ferric tannate is formed. Some other dye (e. g. coal tar), may be present and possibly some henna, as there was organic material present other than tannic acid. Conjunctivitis was thought to have followed the use of this preparation. The high alkalinity of the developer might have caused such a condition.

3160-3166 incl. *Silver polishes.* Tested for cyanide. No evidence of cyanide was found in any of the samples. The test used was that of Schonbein-Pagenstecher (Anteureith and Warren, p. 21). The brands tested were Gelbard's "Just Rite," Green's, Whiting's, Wright's, Noxon, Priscilla, and Removit.

MATERIALS EXAMINED CHIEFLY FOR POISONS

Fifty-five other samples, chiefly instances of suspected poisoning of domestic animals, have been examined at the request of the Commissioner on Domestic Animals and of other officers having similar interests. Some examinations have been made for individuals. Detailed discussion of each of these is not required.

Examinations of this kind require very careful work and consume a considerable amount of time. However, this coöperation appears to serve a useful purpose and it is appreciated by the authorities concerned.

TOBACCO

In addition to partial analyses of 167 samples of tobacco, chiefly determinations of various ash constituents made in connection with tobacco investigations of the Station which are to be reported elsewhere, proximate analyses of tobacco seed and of fresh and cured leaves were made. The carbohydrate separations were made by Mr. Shepard.

PROXIMATE ANALYSIS OF TOBACCO SEED

Water	3.34%
Ash	3.71
Protein (N x 5.34)	20.76
Fiber	14.44
Carbohydrate (other than fiber):	
Starch	none
Water-sol. after hydrolysis, calc. as dextrose	3.08
Water-insol. after hydrolysis, calc. as dextrose	0.55
Undetermined	11.89
Fat, ether extract	42.23

The factor 5.34 for the evaluation of nitrogen in terms of protein is based upon the work of Vickery and Pucher.[1] Water-insoluble carbohydrates represent cell wall constituents converted to reducing sugars upon acid hydrolysis and calculated as dextrose.

PROXIMATE ANALYSES OF TOBACCO, CURED LEAF AND FRESH LEAF

(Air-dry-basis)

	2190 Air dry fermented leaf	4057 Air dry fresh leaf
Water	6.38%	4.50%
Ash	20.80	18.09
Nitrogen, total	4.46	4.51
Fiber	7.18	8.11
Carbohydrate other than fiber:		
Sol. in hot 95% alcohol calc. as dextrose	1.07	2.39
Sol. in water, calc. as dextrose	0.97	0.84
Starch	1.88	1.51
Hemicelluloses, calc. as dextrose	1.47	1.85
Fat (ether extract)	3.20	6.43

Nitrogen is not evaluated as protein because in the cured leaf of tobacco as much as 25 per cent of the total nitrogen may be present in the form of nitrate, about 10 per cent in alkaloidal combination and a smaller amount may be present in ammonium salts.

For the separation of the carbohydrates the fine-ground air-dry tobacco was extracted with petroleum ether and the ether-extracted material then boiled for eight hours with 95 per cent alcohol, enough sodium carbonate being added to neutralize the predetermined acidity of the tobacco. The extract was evaporated to remove alcohol and the residue dissolved as far as possible by repeated additions and decantations of hot water. There was some gum-like material, which did not dissolve. The soluble portion of the alcohol extract was made up to definite volume and aliquots were taken for the determination of reducing power. Sugars were calculated both from the weights of cuprous oxide and from copper determined therein volumetrically. Direct reduction sugar, calculated as dextrose, was found to be 1.02 per cent in the cured leaf and 2.40 per cent in the fresh leaf, both results being on the basis of the original air-dry tobacco. After a 10-minute inversion with hydrochloric acid the reducing power indicated little or no change in sugar, 1.07 per cent being found in the cured leaf and 2.39 per cent in the fresh leaf. A long hydrolysis (two and one-half hours), with dilute acid resulted in a decrease in sugar in both

[1] Dept. of Biochemistry, unpublished data.

cases, probably due to destruction of some carbohydrate. The identity of the sugars present was not established. Mosca[1] however, has reported the presence of levulose in tobacco examined by him, and Smirnow and his co-workers[2] have reported sucrose, maltose and monosaccharides. Our failure to obtain any considerable increase in reducing power after a short hydrolysis indicates no appreciable amount of sucrose in these samples. The behavior on longer hydrolysis is consistent with that which would be expected if levulose or invert sugar were present.

The ether and alcohol extracted material was next extracted with water to remove dextrins and any water-soluble hemicelluloses which might be present. The water extract was then hydrolyzed with 1.25 per cent hydrochloric acid for two and one-half hours and the copper reducing power of the hydrolyzed solution determined. Carbohydrate, expressed as dextrose, was found to be 0.97 and 0.84 per cent in the cured and the fresh leaves respectively, both results being on the basis of the original air-dry tobacco.

Another portion of the ether and alcohol extracted material was extracted with water and then digested with malt extract for the determination of starch. Starch was found to comprise 1.88 per cent of the air-dry cured leaf and 1.51 per cent of the air-dry fresh leaf.

The residue from the malt digestion was washed free from soluble carbohydrates and then hydrolyzed for two and one-half hours with dilute acid to convert hemicelluloses (cell wall constituents) into reducing sugars. Reducing sugars from this source accounted for 1.47 and 1.85 per cent of the air-dry cured leaf and the air-dry fresh leaf respectively.

Crude fat as reported in the analysis is the extract obtained by the use of ethyl ether after extraction for 16 hours.

POTATOES

In collaboration with the Storrs station, 22 samples of potatoes were analyzed. Eleven of these represented tubers after digging in the fall of 1928 and eleven represented the same varieties just before planting in the spring of 1929. Determinations of proximate constituent groups and certain of the ash constituents were made.

Discussion of this work is for publication elsewhere.

BEETS

Seventeen samples of beets were examined for sugar content for the Department of Soils of this Station.

[1] Zeitschr. f. Untersuchung Nahr. Genussm., **33**: 93. 1917.
[2] Planta Archiv fur wissenschaftliche Botanik, **6**: 687. 1928.

WATER

Under the provisions of a statute this laboratory collaborates with the State Water Commission in the investigation of waters polluted by trade wastes. Six samples have been examined during the year and the results reported to Mr. Copeland, sanitary engineer to the Commission.

BABCOCK AND OTHER GLASSWARE

During the year, 2,427 pieces of Babcock test bottles and pipettes and 111 dairy thermometers have been checked, making a total of 2,538 pieces.

	Accurate	Rejected	Total
Test bottles and pipettes	2415	12	2427
Thermometers	102	9	111

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